Space Weather Forecast

Issued on Tuesday 5 November 2024 at 00:33 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate to High solar activity with Moderate flares expected, and a slight chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity was moderate to high with multiple Moderate flares, the largest of which was from a region in the southeast. There are twelve active regions, including two as yet unnumbered region. The spot mentioned above has become larger but less complex in recent hours and has been responsible for the majority of the moderate flares. Numerous spots are set to rotate off the western limb in coming days and as such have become difficult to analyse. A large region consisting of a multiple spots has recently rotated over the eastern limb, which will continued to be analysed as it comes further into view. The remaining spots on the disc are comparatively smaller or less magnetically complex.

A CME (coronal mass ejection) was observed off the E limb in association with the M3.8 flare from the aforementioned region in the southeast, with initial assessment suggesting the CME will miss behind Earths orbit. Gaps in available imagery however mean this is currently lower confidence.

Solar Wind / Geomagnetic Activity: Solar winds have been at slightly elevated levels. The Interplanetary Magnetic Field (IMF), Bt, was predominantly weak throughout. The north-south component, Bz, was initially weakly negative (southward directed), but then oscillated between positive and negative from around 04/1200UTC. Geomagnetic activity was active (Kp4) between 04/0000-04/0300UTC and saw a G1/Minor Geomagnetic Storm (Kp5) interval between 04/0300-0600UTC, before becoming Quiet to unsettled (Kp0-3) for the rest of the period.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) fell to background levels through the period.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate to High activity is expected to continue with occasional Moderate flares expected and a slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: Ongoing fast winds from two coronal holes may see weak enhancement through Day 1 (05 Nov), with further fast wind enhancement possible later Day 3 (07 Nov) or early Day 4 (08 Nov), although this is low confidence. Generally Quiet to Unsettled geomagnetic activity is expected through Day 1 (05 Nov), with a chance of Active and a slight

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chance of G1/Minor Geomagnetic Storm intervals given the ongoing weak HSS influence. Activity then expected to decline to mainly quiet levels through Day 2 (06 Nov), before perhaps becoming unsettled to active later Day 3 or early Day 4 (07-08 Nov), with a chance of G1/Minor geomagnetic Storm intervals due to further HSS influence.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) has now declined to background levels, with only a slight chance of further enhancement.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	Yes	20	5	20	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	80	80	80	80
Very Active	R3-R5 (X Class)	No	20	20	20	20

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	20	15	10	10
Very Active	**≥ S3 ***	No	5	5	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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